PROPOSED

DUTY STATEMENT

Classification: Senior Mechanical Engineer	**Position No.** 5800-3579-002
CBID: R09	**Office:** Energy Efficiency Research
Date Prepared: July 2009	**Division:** Energy Research and Development
KEY: (E) IS ESSENTIAL, (M) IS MARGINAL	

Under the general supervision of the Energy Efficiency Research Office Manager in the Public Interest Energy Research (PIER) Program, the incumbent serves as the senior technical expert on the Industrial, Agriculture and Water (IAW) Research, Development and Demonstration (RD&D) programs. As such, the incumbent is responsible for developing, implementing and administering PIER-funded energy research related to improving the energy efficiency of industrial, agricultural, water and wastewater processes and related engineering systems. The incumbent conducts highly complex engineering analyses such as reviewing specifications and calculating and estimating energy savings, project economics and environmental benefits (e.g., greenhouse gas reductions) in the following areas: heating, ventilating, air-conditioning, refrigeration, plumbing, sanitary, water, water purification and drainage systems, and steam generating plants in common use; hydraulics pertaining to the design of water systems, pressure tanks, and other similar installations. The incumbent will also review a) various codes and standards and safety orders and regulations governing the design and installation of mechanical equipment for industrial, agriculture and water processes, including electric motors; b) materials and maintenance costs in connection with mechanical installations; c) electrical engineering as applied to motors in connection with boilers, air-conditioning, refrigeration, and blower systems; and d) engineering designs of industrial processes, such as mechanical, refrigeration, water, sewage and energy generation systems. The incumbent will conduct detailed field inspections of project construction and installation. The incumbent also plays a key technical role in the development of PIER program policy related to industrial, agriculture and water research. Lastly, as a Senior Mechanical Engineer, the incumbent provides technical leadership, direction, and coordinates efforts among an interdisciplinary team of mechanical engineers and energy specialists working in the Industrial, Agriculture and Water Efficiency subject area.

The incumbent is a subject expert in the area of advanced energy efficiency concepts, technologies, and practices related to industrial, agriculture and water efficiency; performs time-critical and subject matter-critical engineering and market analyses to support public interest energy RD&D funding; oversees highly complex RD&D projects including using his/her mechanical engineering expertise to evaluate industrial, agriculture and water processes; will serve as a policy and technical liaison with national level research

organizations and federal agencies; and consults with experts in the field. The incumbent will also provide expert consultation and testimony as well as leadership, communication, and problem solving capabilities.

WORKING CONDITIONS.

The work is performed in an indoor office and meeting room setting involving sitting, standing, and walking. The candidate must work well with people inside and outside the Energy Commission, including members of the general public. Travel is required to conduct detailed field inspections of projects and assessment of mechanical installations, and to attend meetings, workshops and hearings. Additional hours beyond an eight-hour workday or forty-hour workweek may be required. While performing the duties described below, the incumbent will be required to work alone and/or in a team environment, using a personal computer and appropriate Energy Commission software such as word processing, electronic mail and Internet; participate in and lead meetings with other staff and with other agencies.

DUTIES AND RESPONSIBILITIES:

60% Serve as the principal technical and engineering expert on industrial, agriculture and water energy efficiency. Most projects involve complex and varied mechanical designs, processes and energy conversion systems not typically used in the industry requiring the incumbent to make assessments using thermodynamic, fluid mechanics and heat transfer principals. These include ensuring that projects comply with various codes and safety and environmental regulations and improving industrial processes and systems to operate more efficiently with lower emissions and lower operating and energy costs. Technologies affected include mechanical equipment (cooling, refrigeration boilers furnaces, and associated controls and design tools), electric motors and drives, fluid dynamics and separation and compressed air, and steam and hot water generating plants. The incumbent will: a) read, analyze and interpret plans, drawings, specifications and other technical information for industrial processes, evaluate their performance and assess the level of energy efficiency improvements over existing systems in common use; b) perform the most complex engineering evaluations and design reviews and recommend improvements to enhance mechanical system performance, and engineering design to maximize heat recovery and energy savings while minimizing environmental control, project and operating costs; c) analyze situations accurately based on the PIER policy considerations in deployment of these technologies; d) act as lead to mechanical engineers and technical specialists related to research, development and demonstration projects in the Industrial, Agriculture and Water Efficiency RD&D program; and e) provide engineering advice and expert testimony based on these analyses on behalf of the Industrial, Agriculture and Water Efficiency Research Program to the Research, Development and Demonstration Policy Committee. The incumbent will be responsible for the following:

Resolve complex technical engineering issues faced by mechanical engineers and technical specialists in the Industrial, Agriculture and Water Efficiency RD&D program.

Analyze complex engineering and time sensitive developments relating to innovative and unique mechanical design approaches to enhance energy using systems and provide staff managers with specific engineering guidance on appropriate changes to research projects for industrial processes.

Evaluate and review new industrial process designs to resolve engineering problems to ensure that the energy savings are consistent with mechanical engineering principles and can met the performance as suggested by project proponents and designers.

Identify potential linkages between projects within the PIER program's portfolio related to mechanical systems and facilitating the transfer of technical information between engineering researchers and industry as appropriate.(E)

20% Project Management and Planning. The incumbent serves in a team leadership role for other staff and as the project manager for the most complex research projects that have engineering tasks; reviews and comments on draft deliverables submitted by research contractors; conducts detailed field inspections of material, equipment and operations associated with research projects; reviews recommendations by other staff or research contractors for improvements of mechanical equipment or systems; develops and manages the most complex research projects to ensure that the work performed meets the goals of the contract; and prepares written status reports and oral briefings for office, division, and commission management on the status of the project. The incumbent prepares research project plans, specifies project tasks and estimates budgets for research projects on industrial, agriculture and water processes, including mechanical equipment (cooling, refrigeration boilers furnaces, and associated controls and design tools), electric motors and drives, fluid dynamics and separation, compressed air, and steam, hot water generating plants, water and wastewater systems and other energy using and generating systems. The incumbent will analyze and evaluate highly complex research plans and specifications to meet various regulatory and environmental codes, safety orders and regulations governing the design and installation of mechanical equipment and other industrial installations. (E)

10% Represent the Energy Commission in high-level strategic decision-making roles, including serving on technical committees and the steering committees of national research organizations. This senior technical liaison responsibility requires both the highest degree of engineering knowledge and expertise and sensitivity to statewide policy issues affecting energy research. The incumbent will serve as a program senior engineering expert in meetings with the national research laboratories, the Gas Technology Institute, the American Council for an Energy Efficient Economy, utilities, federal and state government agencies, and other national organizations involved with industrial process research. (E).

5% Consult with stakeholders. The incumbent consults with research organizations, federal and state government agencies, utility representatives and other technical experts to identify RD&D opportunities for alternative and advanced energy systems or technologies in California. Through on-going discussions and interactions with market stakeholders, the incumbent defines, develops and implements projects that provide significant public benefits to California and meet the policy and technical objectives of the PIER Program and the Public Interest Natural Gas Program. (M)

5% Other duties as required consistent with the specification of this classification (M).

SIGNATURES	
I Certify That I Am Able To Perform, With Or Without The Assistance Of A Reasonable Accommodation, The Essential Job Duties Of This Position	
INCUMBENT Date Senior Mechanical Engineer	VIRGINIA LEW Date Office Manager I